



# Small Scale Solutions for your Farm

Managing Manure Nutrients - Central



## Do You Have Problems with:

- Rising fertilizer costs
- Low fertility soils
- Poor soil tilth (workability)
- Manure storage and handling on the farm

Manure is rich in nutrients that crops use, just like the nutrients in fertilizers that you buy. Managing nutrients in manure means taking advantage of the nutrients so you buy less fertilizer and improve soil and water quality.



If manure is not being used for crop nutrients, then it is wasted money.

## Purposes and Benefits of Managing Manure Nutrients

- Purchase less fertilizer
- Add organic matter to soil
- Improve soil quality
- Improve water quality
- Improve crop production
- Manure contains micronutrients needed by crops that typical fertilizer does not provide
- Manure can reduce soil erosion by improving soil quality
- Turns manure into an asset
- Saves crop input costs to make the farm operation more profitable
- Potential for higher quality crops





## What Is Needed to Manage Manure for Nutrient Value?

- Minimum of one soil test for each field
- Analysis of each type of manure and storage facility
- Crop yield goals
- Crop rotation for each field
- Manure spreader calibrated to apply the desire tons/acre.

## How to Maintain Your Manure and Nutrient Management Plan

- Soil test each field every 3 to 5 years
- Analyze the manure annually for nutrient content
- Keep records of crop yields and the amount of manure and other nutrients applied
- Evaluate crop and soil response and revise the plan as needed

## Associated Costs

- Generally, no cost for manure
- Cost to transport and apply the manure—a few dollars more
- Soil tests—\$7 to \$10 per 20 acres
- Manure analysis—\$25 to \$50 per year



Spreading manure is like spreading chemical fertilizer. It contains (N) nitrogen, Phosphate ( $P_2O_3$ ), and ( $K_2O$ ), just like purchased fertilizer it just looks and smells different.





## General Value of the Manure per Ton

Type of Manure	N Value	P <sub>2</sub> O <sub>5</sub> Value	K <sub>2</sub> O Value	Fertilizer Value
Dairy	\$1.50	\$3.00	\$1.05	\$5.55
Swine	\$1.80	\$3.00	\$2.50	\$7.31
Poultry	\$12.00	\$9.50	\$8.40	\$27.90
Assumes: N=\$0.30/lb; P <sub>2</sub> O <sub>5</sub> =\$0.30/lb; K <sub>2</sub> O =\$0.21/lb Pack Type Manure (with Straw Bedding)				



Manure application is calibrated by measuring the weight of manure applied over a measured area. In this case a 10ftX10ft tarp is used to catch manure which is then weighed to determine tons/acre.

## General Nutrient Levels in Manure per Ton

Type of Manure	N Lb/Ton	P <sub>2</sub> O <sub>5</sub> Lb/Ton	K <sub>2</sub> O Lb/Ton
Dairy	5	10	5
Swine	6	10	12
Poultry	40	30	40
Beef	10	10	15
Pack Type Manure (with Straw Bedding)			





## Case Study

Example Nutrient Application for Field #3 and for Year #1						
Field ID	Acre	Crop	Nutrient Recommendations / Applications			
			Yield	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O
			Goal/Acre	Lb/Acre	Lb/Acre	Lb/Acre
Field 3	9.7	Grass Hay	4 ton/ac	100 (Rec)	60 (Rec)	225 (Rec)
12 Ton Beef Lot Manure Applied Jul - Yr 1				22	56	85
231 lbs/ac 0-0-60 Applied Apr - Yr 1				0	0	139
175 lbs/ac 46-0-0 Applied in April - Yr 1				81	0	0
Total Nutrients Applied - Yr 1				103	56	224
Balance After Rec's - Yr 1				+3	-4	-1

The manure applied:

- About 20% of the needed Nitrogen
- Almost all of the P<sub>2</sub>O<sub>5</sub>
- About 37% of the K<sub>2</sub>O
- The value of the manure in this case was \$41.25 per acre.
- This means the manure can replace about \$400 in fertilizer costs for Field #3.

## Crop Yields

Corn Grain	Year 1		Field 1 Crops 9.3
Oats	2		
Hay	3		
Hay	4		
Oats	Year 1		Field 2 Crops 9.7
Hay	2		
Hay	3		
Corn Grain	4		
Hay	Year 1		Field 3 Crops 9.7
Hay	2		
Corn Grain	3		
Oats	4		
Farm HQ's 3.2		Hay Year 1	Field 4 Crops 7.5
		Corn Grain 2	
		Oats 3	
		Hay 4	

